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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicants: Michael P. Reynolds. Examiner: James Arnold, Jr.  
Serial No.: 09/873,848 Group: Art Unit 1764  
Filed: June 4, 2001 Docket: 0031-UP (142-99)  
For: PROCESS FOR HYDROGENATING/ Dated:  
DEHALOGENATING POLYALPHAOLEFIN  
POLYMER, THE RESULTING POLYMER  
AND LUBRICANT CONTAINING SAME

MAIL STOP APPEAL BRIEF-PATENTS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL OF APPELLANTS' BRIEF**

Sir:

Enclosed please find APPELLANTS' BRIEF in triplicate.

Also enclosed is a check in the amount of \$330.00 to cover the appeal fee.

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Respectfully submitted,

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**APPELLANTS' BRIEF**

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	Dated: September 27, 2004	

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPELLANTS' BRIEF**

Sir:


In response to the final Office Action dated April 6, 2004 and the Advisory Action dated July 19, 2004, Applicants appeal pursuant to the Notice of Appeal filed on July 26, 2004 and received in the U.S. Patent and Trademark Office on July 28, 2004. Pursuant to 37 C.F.R. §1.192, this brief is submitted in triplicate in connection with the appeal which has been taken herein.

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**CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postpaid in an envelope, addressed to the: MAIL STOP APPEAL BRIEF-PATENTS Commissioner for Patents, Alexandria, VA 22313-1450 on the date set forth below.

Dated: September 27, 2004

  
Valerie J. Senatore

(1) **REAL PARTY IN INTEREST**

The real party in interest for this application is Uniroyal Chemical Company.

(2) **RELATED APPEALS AND INTERFERENCES**

There are no other related appeals or interferences for this application.

(3) **STATUS OF THE CLAIMS**

Claims 1-7 and 21-23 are pending, stand rejected and are under appeal. All of these claims have been finally rejected and constitute the claims on appeal.

A copy of Claims 1-7 and 21-23 as pending is presented in the Appendix.

(4) **STATUS OF AMENDMENTS**

Appellants' claims were finally rejected in a final Office Action mailed April 6, 2004.

(5) **SUMMARY OF THE INVENTION**

The invention of the appealed claims provides a hydrogenation and/or dehalogenation process for producing a substantially hydrogenated and/or dehalogenated polyalphaolefin polymer by hydrogenating and/or dehalogenating at least one polymerized  $\alpha$ -olefin under catalytic hydrogenation and/or dehalogenation conditions in the presence of hydrogen and a catalytically effective amount of a substantially amorphous hydrogenation/dehalogenation supported catalyst comprising a metal component on an inorganic material based support wherein the metal component is present in an amount of about 0.01 to about 5 weight percent, based on the total weight of the catalyst (independent Claim 1). The catalyst employed in the process also has a

particle size distribution having particles greater than about 250 microns and particles less than about 75 microns (dependent Claim 23).

(6) **ISSUES**

The issue presented in this appeal is whether Degnan U.S. Patent No. 5,573,657 (“Degnan”) establishes the *prima facie* obviousness of the steps of the process of appealed Claims 1-7 and 21-23.

(7) **GROUPING OF CLAIMS**

The claims on appeal, i.e., Claims 1-7 and 21-23, are grouped as follows:

- (1) Claims 1-7, 21 and 22; and
- (2) Claim 23.

8) **ARGUMENT**

Appealed Claims 1-7 and 21-23 were improperly rejected under 35 U.S.C. §103(a) as obvious over Degnan, which nowhere teaches or suggests appellants’ claimed invention.

A. Degnan Fails to Establish the *Prima Facie* Obviousness of the Process of Appealed Claims 1-7 and 21-23.

1. The Examiner’s Position

In the Advisory Action and final Office Action, the Examiner applied the reference as follows:

Degnan reference discloses that it is well known that hydrogenation is conventionally carried out in the presence of a catalyst usually comprising a metal hydrogenation component on a porous support material. See column 1, lines 19-25. Suitable metals include nickel, palladium, platinum, rhodium, and/or iridium. See column 1, lines 25-28. Suitable supports include silica-alumina (amorphous). See column 1, line 27. The reference further teaches a

specific alpha olefin feed in the form of 1- decene (which is between 2 and 20 carbon atoms). See column 1, lines 53-54.

\* \* \*

The reference does not disclose a metal component in the amount of about 0.01 to about 5 weight percent based on the total weight of the catalyst; or a catalyst with a particle size distribution having particles greater than about 250 microns and particles less than about 75 microns.

\* \* \*

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a metal component in the amount of about 0.01 to about 5 weight percent based on the total weight of the catalyst; and a catalyst with a particle size distribution having particles greater than about 250 microns and particles less than about 75 microns because the catalytic components are disclosed by the reference and it would be appropriate to adjust the weight of the metal component and the particle size of the catalyst to enhance its effectiveness.

## 2. Appellants' Position

Before showing how the Examiner's rejection of the appealed claims fails to make out a *prima facie* case of obviousness, a statement of the legal principles relating to the establishment of *prima facie* obviousness would be worthwhile. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992) succinctly sets forth the principles as follows:

The *prima facie* case is a procedural tool of patent examination, allocating the burdens of going forward as between examiner and applicant. *In re Spada*, 911 F.2d 705, 707 n.3, 15 USPQ2d 1655, 1657 n.3 (Fed. Cir. 1990). The term "*prima facie* case" refers only to the initial examination step. *In re Piasecki*, 745 F.2d 1468, 1572, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). As discussed in *In re Piasecki*, the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant.



After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument. *See In re Spada, supra; In re Corkill*, 771 F.2d 1496, 1500, 226 USPQ 1005, 1008 (Fed. Cir. 1985); *In re Caveny*, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed. Cir. 1985); *In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984).

If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent. *See In re Grabiak*, 769 F.2d 729, 733, 226 USPQ 870, 873 (Fed. Cir. 1985); *In re Rinehart, supra*.

*Oetiker* and the cited precedents are clear on this: if it can be shown that the Examiner has failed to make out a *prima facie* case of obviousness, the final rejection herein must be reversed.

The U.S. Patent and Trademark Office guidelines for *prima facie* obviousness are set forth in MPEP 2142 (Legal Concept of *Prima Facie* Obviousness) as follows:

...First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The Examiner's rejection of Claims 1-7 and 21-23 fails to meet any of these criteria much less all three for at least the following reasons.

- a. Claims 1-7, 21 and 22 are Distinct  
Over Degnan

As acknowledged by the Examiner, nowhere does Degnan disclose or suggest a process for the hydrogenation and/or dehalogenation of polyalphaolefin to

provide a substantially hydrogenated and/or substantially dehalogenated polyalphaolefin homo- or copolymer employing a catalytically effective amount of a substantially amorphous hydrogenation/dehalogenation catalyst comprising a metal component on an inorganic material based support wherein the metal component is present in an amount of about 0.01 to about 5 weight percent, based on the total weight of the catalyst as presently recited in Claim 1.

Rather, Degnan discloses in the background of the invention that hydrogenation is a well-established process and can be carried out in the presence of a catalyst which contains a metal hydrogenation component, e.g., nickel or noble metals such as platinum, palladium, rhodium and iridium, on a porous amorphous support material such as alumina, silica and silica-alumina which have a pore size distribution with most of the pores larger than 50 Å and most of these are larger than 100 Å. However, Degnan is completely silent as to any weight amount that the metal hydrogenation component is present on the porous amorphous support material of the amorphous catalyst. Degnan then goes on to disclose that they had discovered another class of catalytic materials for the hydrogenation of lubricant hydrocarbons, especially synthetic PAO-type materials, based on a hydrogenation catalyst containing a noble metal hydrogenation component on a support comprising an inorganic, porous crystalline phase material having pores with diameters of at least about 13 Å.

At no point, however, is there even a remote disclosure, suggestion or a hint in Degnan that the metal component of an amorphous hydrogenation catalyst

comprising a metal component on an inorganic material based support is present in an amount of about 0.01 to about 5 weight percent, based on the total weight of the catalyst.

According to the first of the MPEP criteria, the Examiner must show that there is some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference so as to achieve what appellant is claiming as his invention. The Examiner purports to satisfy the requirements for a *prima facie* case of obviousness by asserting that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a metal component in the amount of about 0.01 to about 5 weight percent, based on the total weight of the catalyst because the catalytic components are disclosed by the reference and it would be appropriate to adjust the weight of the metal component to enhance its effectiveness."

Contrary to the Examiner's assertion, it is well established that "obvious to try" has long been held not to constitute obviousness. *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). As is the case here, one skilled in the art would not have a reasonable expectation of success from the disclosure of Degnan to arrive at the claimed invention. Instead, one skilled in the art of catalysis would readily understand that each catalyst yields different results in activity, selectivity, conversion, tendency to poison, and final product distribution based on a variety of factors, e.g., the starting type of metal salt and support, the specific methods used to formulate the catalyst and the manner in which the metal is deposited (e.g., inside pores on the support, outside pores on the surface, or both). As such, one skilled in the art of catalysis would not

readily know what result would be obtained based on any amount of metal present on any support. Additionally, the entire patentability of the Degnan claims lies in patentee's discovery of a new crystalline catalyst having high pore volume, high surface area and controlled pore openings of at least 13 Å for hydrogenation of lubricant hydrocarbons. Accordingly, given the known diversity and complexity in the art of catalysis, the Examiner has failed to make out a *prima facie* case of obviousness.

Satisfying the next criterion for a *prima facie* case of obviousness, that there must be a reasonable expectation of success, is ruled out by the fact that one skilled in the art of catalysis would not readily know what result would be obtained based on any amount of metal present on any support given the known diversity and complexity in the art of catalysis. Besides, it is quite a presumption that one could merely adjust the weight of the metal component of a catalyst to obtain the desired result with any expectation of success without conducting an unreasonable amount of experimentation. Thus, nothing in Degnan would lead one skilled in the art to modify the hydrogenation catalyst disclosed therein and arrive at the recited substantially amorphous hydrogenation/dehalogenation catalyst comprising a metal component on an inorganic material based support wherein the metal component is present in an amount of about 0.01 to about 5 weight percent, based on the total weight of the catalyst for use in the claimed process for the hydrogenation and/or dehalogenation of polyalphaolefin to provide a substantially hydrogenated and/or substantially dehalogenated polyalphaolefin homo- or copolymer with any expectation of success. Accordingly, the Examiner has again failed to make out a *prima facie* case of obviousness.

Degnan cannot possibly satisfy the third criterion for a prima facie case of obviousness, i.e., that of teaching or suggesting all of the claim limitations, in particular, the limitation that metal component of appellant's claimed substantially amorphous hydrogenation/dehalogenation catalyst is present in an amount of about 0.01 to about 5 weight percent, based on the total weight of the catalyst. As previously stated, the Examiner has acknowledged that Degnan is completely silent as to any weight amount that the metal hydrogenation component is present on the porous amorphous support material of the amorphous catalyst.

Thus, since Degnan does not disclose or suggest a process for the hydrogenation and/or dehalogenation of polyalphaolefin to provide a substantially hydrogenated and/or substantially dehalogenated polyalphaolefin homo- or copolymer employing a catalytically effective amount of a substantially amorphous hydrogenation/dehalogenation catalyst comprising a metal component on an inorganic material based support wherein the metal component is present in an amount of about 0.01 to about 5 weight percent, based on the total weight of the catalyst as presently recited in appealed Claim 1, appealed Claims 1-7, 21 and 22 are believed to be nonobvious, and therefore patentable, over Degnan.

a. Claim 23 is Further Distinct  
Over Degnan

With regard to Claim 23, which depends from independent Claim 1, further requires the catalyst have a particle size distribution having particles greater than about 250 microns and particles less than about 75 microns. In fact, the Examiner has

acknowledged that Degnan does not disclose or suggest a process for the hydrogenation and/or dehalogenation of polyalphaolefin wherein the hydrogenation/dehalogenation catalyst has a particle size distribution having particles greater than about 250 microns and particles less than about 75 microns as generally recited in Claim 23.

In order to meet his burden of a *prima facie* obviousness rejection, the Examiner alleges that “[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a catalyst with a particle size distribution having particles greater than about 250 microns and particles less than about 75 microns because the catalytic components are disclosed by the reference and it would be appropriate to adjust the particle size of the catalyst to enhance its effectiveness.

However, Degnan merely discloses in the background of the invention that hydrogenation is a well-established process and can be carried out in the presence of a catalyst which contains a metal hydrogenation component, e.g., nickel or noble metals such as platinum, palladium, rhodium and iridium, on a porous amorphous support material such as alumina, silica and silica-alumina which have a pore size distribution with most of the pores larger than 50 Å and most of these are larger than 100 Å.

As previously stated, it is well established that "obvious to try" has long been held not to constitute obviousness. *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). One skilled in the art of catalysis would readily understand that each catalyst yields different results in activity, selectivity, conversion, tendency to poison, and final product distribution based on a variety of factors, e.g., the starting type of metal salt and support, the specific methods used to formulate the catalyst

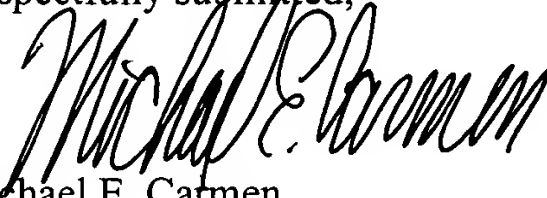
and the manner in which the metal is deposited (e.g., inside pores on the support, outside pores on the surface, or both). Accordingly, one skilled in the art of catalysis would not readily know what result would be obtained based on any amount of metal present on any support and the particle size distribution of the particles of the catalyst. As such, nothing in Degnan would lead one skilled in the art to modify the hydrogenation catalyst disclosed therein containing a noble metal hydrogenation component on a support comprising an inorganic, porous crystalline phase material having pores with diameters of at least about 13 Å to arrive at the claimed substantially amorphous hydrogenation/dehalogenation catalyst comprising a metal component on an inorganic material based support wherein the metal component is present in an amount of about 0.01 to about 5 weight percent, based on the total weight of the catalyst, and a particle size distribution having particles greater than about 250 microns and particles less than about 75 microns for use in the recited process for the hydrogenation and/or dehalogenation of polyalphaolefin to provide a substantially hydrogenated and/or substantially dehalogenated polyalphaolefin homo- or copolymer with any expectation of success. Thus, given the known diversity and complexity in the art of catalysis, the Examiner has failed to make out a *prima facie* case of obviousness.

Accordingly, since Degnan nowhere discloses or suggests the presently recited particle size distribution of the catalyst for use in the process of Claim 23, Claim 23 is believed to be further distinct over Degnan.

B. Conclusion

For the foregoing reasons and for all of the reasons of record, it is submitted that appealed Claims 1-7 and 21-23 are patentable over the prior art relied upon by the Examiner. Reversal of the final rejections by the Board is therefore believed to be warranted, such being respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael E. Carmen", written in a cursive style.

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(9) **APPENDIX**

1. A process for the hydrogenation and/or dehalogenation of polyalphaolefin to provide a substantially hydrogenated and/or substantially dehalogenated polyalphaolefin homo- or copolymer, the process comprising hydrogenating and/or dehalogenating at least one polymerized  $\alpha$ -olefin under catalytic hydrogenation and/or dehalogenation conditions in the presence of hydrogen and a catalytically effective amount of a substantially amorphous hydrogenation/dehalogenation catalyst comprising a metal component on an inorganic material based support wherein the metal component is present in an amount of about 0.01 to about 5 weight percent, based on the total weight of the catalyst.

2. The process of Claim 1 wherein the  $\alpha$ -olefin of the polyalphaolefin contains from 2 to about 20 carbon atoms.

3. The process of Claim 1 wherein the  $\alpha$ -olefin of the polyalphaolefin contains from about 6 to about 12 carbon atoms.

4. The process of Claim 1 wherein the  $\alpha$ -olefin of the polyalphaolefin is 1-decene.

5. The process of Claim 1 wherein the metal component of the catalyst is one or more Group VIII metals of the Periodic Table selected from the group consisting of Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt, and salts thereof.

6. The process of Claim 1 wherein the inorganic support is a material selected from the group consisting of silica, alumina and silica-alumina.

7. The process of Claim 1 wherein the amorphous hydrogenation/dehalogenation catalyst is palladium on a silica-alumina support.

21. The process of Claim 1 wherein the metal component is present in an amount of about 0.05 to about 3 weight percent, based on the total weight of the catalyst.

22. The process of Claim 1 wherein the metal component is present in an amount of about 1.5 to about 2.5 weight percent, based on the total weight of the catalyst.

23. The process of Claim 1 wherein the hydrogenation/dehalogenation catalyst has a particle size distribution having particles greater than about 250 microns and particles less than about 75 microns.